

## ABSTRACT OF THE DISCLOSURE

A crystal analyzing apparatus is provided which is capable of performing three-dimensional crystal analysis. With an electron beam (B2) scanning a measured surface (S1), a detecting unit (6) detects an electron backscatter diffraction pattern from each pixel in the measured surface (S1) and a data processing block (9) analyzes the data (D1) to obtain two-dimensional distribution data (K1) about the crystal orientation of the measured surface (S1). Next, an ion beam (B1) is emitted to slice the sample (11), so as to form the next measured section (S2) at a position inward from the measured surface (S1) by a given distance (L). Two-dimensional distribution data (K2) about the crystal orientation of the measured surface (S2) is then obtained. These operation steps are repeated to sequentially obtain crystal-orientation two-dimensional distribution data (K3) to (Kn) about measured surfaces (S3) to (Sn). Next, the data processing block (9) stacks the two-dimensional distribution data (K1) to (Kn) in this order to construct crystal-orientation three-dimensional distribution data (Q).